

subulata multo superantibus, filamentis basi dilatatis uno cum corollæ basi in anulum circa capsulam coalitis. *Wight, Cat.* n. 2441.

Hab. in montibus Peninsulæ australioribus, *Wight.*

[To be continued.]

XI.—*Observations on the Tortoise or Shield Beetles, commonly denominated Cassida by Linnæus, with the Characters of Six New Genera.* By the Rev. F. W. HOPE, F.R.S., F.L.S., F.Z.S., and Member of various Foreign Societies.

[With a Plate.]

OF late years, amongst Coleopterous Insects, the *Adephaga* have engaged much of the attention of entomologists, probably because they stand foremost in the artificial arrangement of modern authors; there are however some remarkable exceptions to the contrary, such as the *Curculionidæ* now in progress of publication by the illustrious Schönherr, the *Cetoniadæ* and *Buprestidæ* by Gory and Percheron, and also the *Heteromera* by Solier. Other groups, however, have been comparatively neglected, and particularly the *Cassidoidea*. I purpose therefore in the present paper to examine the group, and suggest the adoption of some new genera, to be classed under the family of *Cassidæ*, so named by Dr. Leach. *Cassida* of Linnæus is very rich in species. It presents us with singularly grotesque and varied forms, and if we look more particularly to the larvæ, no less remarkable will they be found in their earlier stages than in their complete development. The larvæ sometimes assume the appearance of vegetation, some imitating in that state the squamæ of the fir cones, others again the filamentous appearance of plants and lichens. The entire group which I term *Cassidoidea* is composed of several families and is confined to no particular country. Several of the forms which predominate in the New World have not their counterpart in the Old World, at least as far as we know at present. The European species with their larvæ and habits have been ably described by Rœsel Reaumur, DeGeer, and others. Our indigenous British species early attracted the attention of my friend the Rev. Wm. Kirby, three of which, with their

transformations, are described in the third volume of the Linnæan Transactions. The whole group appears to be entirely herbivorous in its habits. In our own country they are chiefly partial to thistles and marsh marigolds, occurring also on the water-mint and other aquatic plants. The thistle, when much infested by the larvæ early in the summer, occasionally appears as if scorched by fire; the marsh marigolds turn perfectly black, and in some years, when attacked by these parasites, they are not only greatly impoverished by them, but are entirely destroyed. The number of European tortoise beetles known is about forty species. It is difficult however to state the numbers accurately, as great difference of opinion exists as to what are really species; their synonymy is perplexing, and, as the range which some species enjoy is very extensive, there is consequently an increase of varieties, arising probably from difference of food, climate, temperature, and soil. Instead of entering accurately into their geographical distribution, I shall merely state the numbers mentioned by authors, and then add some general remarks on the whole. Linnæus, in his 'Systema Naturæ,' gives us but 23 species, Olivier 105, Fabricius, after separating *Imatidium*, 119. The Baron De Jean, including the latter genus, gives us in the first Catalogue 109, and in his last about 400. In my own collection there are 500 species, and at least 200 more have fallen under my notice; and as *Cassida* is a group which has been greatly neglected, it will eventually be found much more numerous than is at present supposed. Out of the 500 now known, 400 belong to the New World. Perhaps scarcely 40 will be found mentioned in catalogues and works as inhabiting Africa, and less is the number described from Asia, even including the extended continent of Australia. Professor Perty, in his 'Conspicuum Coleopterorum Indiæ Orientalis,' mentions but 22 from Asia. From the above statement, therefore, it will appear that the New World affords a very large proportion of the *Cassidoidea* known. As to the European species, there is not much reason to think that they will prove to be much more numerous than at present. As to African *Cassidæ*, they will eventually be found to be considerably more numerous than the European species, and I am inclined to think that

those of Asia will far outnumber those of Africa. In both of the last-mentioned continents, large tracts of diversified country are unexplored, and till we become better acquainted with their entomology, it may seem like presumption to attempt to express an opinion respecting them. At the end of this paper will be found references to the different authors who have written on the *Cassidoidea* of the chief divisions of our globe; I shall therefore refer the entomologist for further information to the species described by them, and conclude these observations with a remark on the peculiar colouring matter of some of these beetles which are called tortoise or shield beetles.

Little, very little is known, respecting the substance composing the elytra of insects, and what has been written respecting chitine or elytrine does not appear to be applicable to several of the *Cassidæ*: I allude more particularly to the brilliant metallic splendour of those diaphanous species allied to *Cassida nobilis*, Linnæus, which are frequently ornamented with greenish-gold and sulphury-silver coloured spots and fasciæ, the colours of which disappear when the insects are dead, but may be made to reappear by immersing them in hot water. I am inclined to think that the colouring matter, alluded to in the above insects, is not to be found in the elytra, but is derived from the intestines. I do not here attempt to explain the cause, but merely record an impression, which may be erroneous; it is with a hope indeed of inducing others to investigate a cause very imperfectly understood, that this suggestion is now thrown out.

CASSIDA, LINNÆUS.

CASSIDA, Leach. CASSIDOIDEA, Hope.

The first genus which I propose to separate from the multiplicity of forms now arranged under the term *Cassida* is the

Genus *Mesomphalia**. Pl. IV. fig. 1.

Type of the genus *Cassida gibbosa* of Fabricius.

Forma fere orbicularis.

* *Mesomphalia* is derived from *μεισομφάλιον*, or from *μείσος* and *ὀμφαλός*, the boss of a shield.

Antennæ 11 articulatae cylindricæ, articulo 1^{mo} crasso, 2^{do} minimo, reliquis fere æqualibus, extimo apice subconico.

Labrum breve, margine antico valde inciso.

Mandibulæ cochleariformes, apicibus incisus.

Maxillæ breves bilobæ, lobo superiori tenui recto.

Palpi maxillares crassi et cornei, articulo 2^{do} longo, duobus ultimis brevioribus et fere æqualibus.

Mentum parvum corneum antice angustum.

Labium membranaceum subquadratum.

Palpi labiales cornei, articulo 2^{do} longiori, ultimo ovato.

Elytra orbicularia ante medium umbone armata.

Thorax rotundatus emarginatus.

Prosternum sub ore protensum, intra pedes anticos productum et contractum, canaliculatum.

To this genus belong *Cassida 6-pustulata*, *lateralis*, *discors*, *inæqualis*, *reticularis*, and *discoidea* of Fabricius, and also *ænea* of Olivier, and at least 60 other species, many of which are unpublished: several of them will be found ably described by my friend Professor Germar of Halle, in his 'Species Insectorum,' a work not sufficiently appreciated in this country; it was published in 1824 at Halle in Saxony.

*Dolichotoma**, Hope. Pl. IV. fig. 2.

Type of the Genus, *Cassida Chloris*, Hope.

Antennæ, 11 articulatae, articulis sex basalibus glabris, reliquis villosis, 1^{mo} crasso, 2^{do} minimo, quatuor sequentibus parvis et æqualibus, reliquis multo longioribus.

Mandibulæ parvæ quadratae, extus tuberculo corniformi armatae.

Maxillæ minutæ subcoriaceæ, lobis duobus rotundatis.

Palpi maxillares minuti, articulis subæqualibus, extimo conico.

Mentum parvum coriaceum. *Labium* subtrigonum setosum.

Palpi labiales minuti, articulis subæqualibus, ultimo ovato-conico.

Elytra orbicularia, ante medium angulato-elevata.

Thorax antice rotundatus, lateribus in dentem acutum productis.

Prosternum inter pedes anticos latius, subplanum.

* From *δολιχός* et *τομή*.

D. Chloris, Hope, long. 7 lin., lat. 7 lin. Totum corpus supra viride, thorace utrinque acute-angulato, convexo, impunctato; elytris in medio disci angulato-nodosis, subrugosis, lateribus externis glabris; corpus subtus atrum, elytris infra subcaneis, pedibus nigris plantisque ferrugineis.

Habitat in Insula Sancti Vincentii.

This *Cassida* I obtained by purchase from the valuable collection of the Rev. Lansdown Guilding. To this genus belong *Cassida strigata* of Schuppell, and *luctuosa* of Olivier and others.

*Selenis**, Hope. Pl. IV. fig. 3.

Type of the Genus, *Cassida perforata* of Fabricius.

Antennæ articulis compressis extrorsum crassioribus, 1^{mo} crasso, 2^{do} minimo, 3^{tio} longo gracili, 4^{to} breviori, 5^{to} et reliquis longitudine decrescentibus, et gradatim crassioribus, extimo apice acuto.

Mandibulæ corneæ multidentatæ.

Maxillæ simplices, lobis rotundatis.

Palpi maxillares 1^{mo} minimo, 2^{do} longissimo curvato, apice lateriori, 3^{tio} et extimo æqualibus, ultimo apice conico.

Mentum parvum subquadratum.

Labium parvum trigonum et setosum.

Palpi labiales 1^{mo} articulo brevi, 2^{do} elongato, 3^{tio} subsecuriformi.

Elytra semicircularia ante medium angulato elevata, humeralibus angulis acute porrectis, apice elytrorum acuminato.

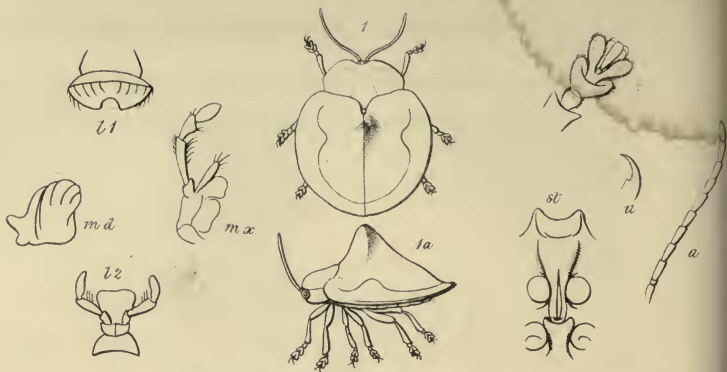
Thorax trigonus utrinque in spinam acutam productus.

S. perforata I make the type of the genus. It appears doubtful after examining many specimens of the above insects if the perforations are not the result of accident; no two specimens accord; the holes under a lens seem irregularly worn, the effect may be caused simply by attrition; it may be remarked also that the elytra of the same insect differ considerably; the only published species besides the type is *C. Spinifex*, Fab., which is considered only as a sexual distinction. There are, however, in our English cabinets others which are undescribed.

* *Selenis*, from the Greek Σελήνη, signifying a crescent.

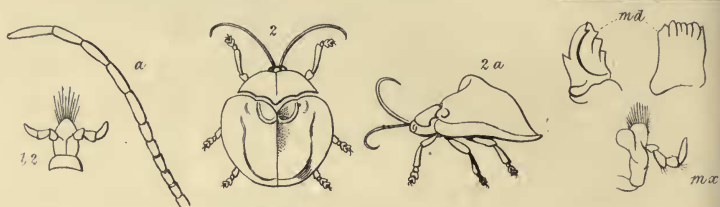


1



Mesomphatia gibbosa

2



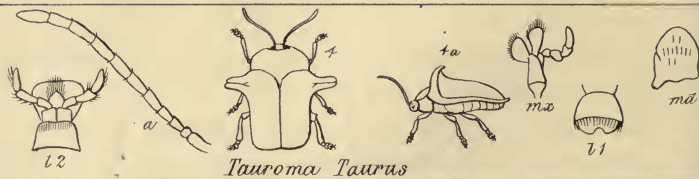
Dolichotoma Chloris

3



Selenis perforata

4



Tauroma Taurus

5



Desmonota platynota

6



Balonota bidens

*Tauroma**, Hope. Pl. IV. fig. 4.

Type of the Genus, *Cassida Taurus* of Fabricius.

Antennæ articulo 1^{mo} crasso, 2^{do} minimo, quatuor sequentibus longioribus æqualibus, metallicis, quatuor proximis longioribus æqualibus villosis, extimo majori ovato-conico.

Mandibulæ latæ cochleariformes, apice edentulæ.

Labrum breve corneum, in medio acute emarginatum.

Maxillæ minutæ bilobæ et ciliatæ.

Palpi maxillares perbreves, articulo 7^{mo} minimo, duobus proximis æqualibus, ultimo conico-ovato.

Mentum transversum, angulis anticis rotundatis.

Labium breve conicum et pilosum.

Lingua magna et membranacea.

Palpi labiales maxillaribus longitudine æquales, articulo 1^{mo} brevi, duobus aliis longitudine æqualibus, at ultimo ovato-conico.

Elytra angulis anticis utrinque in spinam crassam truncatam porrectis, angulis posticis rotundatis dorso haud tuberculato.

Thorax antice rotundatus valde emarginatus.

Prosternum latum planum.

To the above genus belong *C. bicornis*, Fab., one of the most splendid of the *Cassidoidea*. Monsieur Chevrolat has named a third species as inhabiting Mexico: as I am doubtful however of its having been described and published, I am unwilling to mention manuscript or catalogue names; a fourth I now describe from my cabinet.

Tauroma punctipennis, Hope. Long. 5 lin., lat. 3½ lin. Atro-viridis elytris fortissime punctatis, dorso convexo cornibus humeralibus crassis et truncatis. Corpus subtus atro-cyaneum, pedibus concoloribus plantisque ferrugineis.

Habitat in Brasilia in Museo nostro.

Desmonota †, Hope. Pl. IV. fig. 5.

Type of the Genus, *Cassida Platynota* of Germar.

Antennæ articulo 1^{mo} crasso, 2^{do} minimo, octo sequentibus fere æqualibus subdepressis, extimo ovato.

* Derived from ταῦρος and ὄμος, *humerus*.

† From δεσμός and νῶτος, *tergum*, notted back.

Mandibulæ crassæ corneæ, apice truncato, dentibus duobus externis majoribus.

Labrum corneum medio marginis antice emarginato.

Maxillæ membranaceæ bilobæ, lobo externo parvo et coriaceo.

Palpi maxillares breves, 1^{mo} minuto, 2^{do} et 3^{tio} subtrigonis, ultimo ovato-acuto.

Mentum transversum.

Labium parvum trigonum setosum.

Lingua maxima et membranacea.

Palpi labiales maxillaribus æquales, 1^{mo} brevi, duobus aliis longitudine æqualibus, ultimo apice acuto.

Elytra oblongo-quadrata, nodoso-convexa.

Thorax transversus, margine antico fere recto, lateribus obliquis, angulis posticis recte truncatis, margine et postico in medio angulato.

Prosternum latum inter pedes anticos subimpressum.

The name of *platynota* was originally published by Germar, and is therefore retained in preference to that of *nodosa* of De Jean; there are other species belonging to it; some of those in the French collections I regard merely as varieties. The species of this division require a very accurate examination; none of my acquaintance accord altogether with the above generic characters, they require therefore further subdivision; the typical insect is from the Brazils.

*Batonota**, Hope. Pl. IV. fig. 6.

Type of the Genus, *Cassida bidens* of Fabricius.

Antennæ articulo 1^{mo} crasso, quatuor sequentibus æqualibus minutis, sex sequentibus multo longioribus, et fere longitudine æqualibus, ultimo apice conico.

Mandibulæ subquadratae apicibus multidentatis.

Maxillæ bilobæ lobo externo coriaceo.

Palpi maxillares articulo 1^{mo} brevi, tribus aliis fere æqualibus et præcedenti multo longioribus et crassioribus.

Mentum transversum.

Labium parvum subrotundatum et ciliatum.

Palpi labiales graciles, articulo 1^{mo} crasso, duobus aliis æqualibus et præcedenti paullo longioribus.

* From *βάτος*, a thorn, and *νότος*, back, Thorn-backed *Cassidæ*.